Loop-O9400S
SDH/SONET ADM/TM

Features:

- 1U height, full front access (ETSI) unit
  - 1US1 shelf STM-1(OC-3)
  - 1US4 shelf STM-1/4(OC-3/12)
- Rack mount, wall mount, and stand-alone
- Aggregate Lines
  - STM-1(OC-3) software configurable
  - STM-1/4 (OC-3/12) software configurable
  - Two hot-swappable aggregate lines
- On-board tributaries on TG1 slot
  - Up to 16 E1(120 ohm)/T1
  - Up to 16 E1(75 ohm)
- Fixed tributary modules on TG2 and TG3 slots
  - Up to two 16 E1(120 ohm)/T1 tributary modules
  - Up to two 16E1 (75 ohm) tributary modules
  - Up to six E3/T3 tributary modules (for 1US4 only)
  - Up to one 1 GbE and 3 FE EoS module with L2 switch (for 1US4 only)
  - Up to two 1 GbE or 4 FE (manufacture option) EoS module without L2 switch
- Power Modules
  - Two hot-swappable DC plug-in modules (-36 to -75 Vdc)
  - Single AC plug-in module (90 to 240 Vac)
  - AC and DC (coexistent) fixed module (90 to 240 Vac / -36 to -75Vdc)
- Two RS232 Asynchronous
- Networking Protection
  - SNCP protection
  - MSP (1+1) protection for TM
- TM, ADM, cross-connect
- VC11/VC12/VC3/VC4 cross-connect
- External/Internal/Line timing with SSM
- Supports VCAT, LAPS, GFP, LCAS, and non-LCAS
- Performance monitoring
- Alarm suppression, masking, and reporting
- Ethernet Order Wire (EOW) using VoIP technology
- Management:
  - Console Port, VT-100 menu-driven; SNMP Port
  - Centralized management with Loop's EMS/iNMS over DCC channel
  - LoopView GUI EMS (Element Management System)
  - Loop iNMS* with full FCAPS and end-to-end circuit management
  - Telnet support
  - SSH
- RoHS compliant

*Future option

Description

The Loop-O9400S ADM/TM is a compact, economic STM1/4 (OC-3/12) ADM & TM multiplexer designed to add and drop up to [note 1]:

1US1 shelf STM-1(OC-3)
- 48 E1/T1 tributaries
- 2 GbE tributaries
- 8 FE tributaries

1US4 shelf STM-1/4(OC-3/12)
- 48 E1/T1 tributaries
- 6 E3/T3 tributaries
- 2 GbE tributaries
- 8 FE tributaries

With up to two aggregate STM-1/4 (OC-3/12) interfaces, the Loop-O9400S can offer the service provider a versatile protection scheme including SNCP and MSP (1+1) protection for both ring and linear network topology.

All interfaces are fully compliant with the relevant ETSI standards and ITU recommendations. The Loop-O9400S provides powerful OAM&P (Operation, Administration, Maintenance and Provisioning) functionality, including fault management, performance monitoring, configuration management, and network security management. Through the console port, LAN port, Inband E1 and DCC channel, the OAM&P can be achieved both locally and remotely via SNMP or menu-driven interfaces.

Powerful SDH Loop's EMS/NMS

The Loop-O9400S provides a complete set of operation interfaces that are consistent with the Telecommunication Management Network (TMN) concept (ITU Recommendation M.30, G.784) for SDH/SONET Network Element/Operations System (NE/OS), NE/NE, and NE/Craft communications. Users can easily operate the Loop-O9400S both locally or remotely for centralized management.

Note 1: Detail on Tributary Type and Capacity Reference Table shown in the following page.

Ordering Information

To specify options, choose from list below:
Note: All O9400S units, plug-in modules and accessories are RoHS compliant.
Note: If a different environment requirement is needed, please contact Loop's Marketing & Sales team regarding availability.

Model	Description	Note
Main Unit		
Loop-O9400-S-1US4-agg1-agg2-tg1-tg2-tg3-pp1-pp2-**G**	1U height shelf with STM-1/4(OC-3/12) engine	
Loop-O9400-S-1US1-agg1-agg2-tg1-tg2-tg3-pp1-pp2-**G**	1U height shelf with STM-1(OC-3) engine	
Plug-in Card		
Loop-O9400-S-SFPC-**G**	SFP (mini-GBIC) housing plug-in card without SFP module	Order one or two cards

Accessories

User's Manual		
Loop-O9400-S-UM-1US4	Optional, paper copy of User Manual. A CD version of the manual is already included as standard package.	
Loop-O9400-S-UM-1US1	Optional, paper copy of User Manual. A CD version of the manual is already included as standard package.	
Power Cord		
Loop-ACC-PC-USA	AC power cord for Taiwan/America	
Loop-ACC-PC-EU	AC power cord for Europe	
Loop-ACC-PC-UK	AC power cord for UK	
Loop-ACC-PC-AUS	AC power cord for Australia	
Loop-ACC-PC-CH	AC power cord for China	
Order wire phone		
Loop-O9400-S-OW-**G**	Order Wire (VoIP) Phone	
SIP Proxy Server		
Loop-O9400-S-SIP	SIP Proxy Server Basic Software	Customer must provide a MAC address so that a license key can be generated to operate the software at that address.
Conversion Panels		
Loop-ACC-P-1SCSI-16RJ-**G**	One SCSI to sixteen RJ (1u height) without cable	
Loop-ACC-P-1SCSI-16WW-**G**	One SCSI to sixteen Wire Wrap (1u height) without cable	
Loop-ACC-P-1SCSI-16BNC-**G**	One SCSI to sixteen BNC (1.5u height) without cable	
Conversion Cable		
Loop-ACC-CAB-SCSI68M-200-1SCSI68M-**G**	SCSI68/Male to one SCSI68/Male; Length 200 cm	Used for all Conversion Panels
Ear Mounts		
19"/23' ear mounts	A pair of 19"/23" ear mounts is supplied as part of standard package. **Note**: For other sizes, please contact your nearest Loop sales representative.	

■ where **agg1** and **agg2** are used to select aggregation line type:

SFPC	SFP (mini-GBIC) housing plug-in card without SFP module	Order SFP modules separately from SFP module plug-in table below.

SFP Optical/Electrical Module Plug-in Tables

SFP 155 Mbps (mini GBIC) Dual Fiber	MHBTW	Multi-mode optical module with dual uni-directional fiber, 155Mbps, 1310nm, 2Km, LC connector w/o DDM, Fast Ethernet and compliant with ITU G.957	Use 2 fibers for all SFP optical modules
	PHB3W	Single-mode optical module with dual uni-directional fiber, 155Mbps 1310nm, 30Km, LC connector w/o DDM, S-1.1/IR1/Fast Ethernet	
	PHB5W	Single-mode optical module with dual uni-directional fiber, 155Mbps, 1310nm, 50Km, LC connector w/o DDM, L-1.1/LR1/Fast Ethernet	
	PHC8W	Single-mode optical module with dual uni-directional fiber, 155Mbps, 1550nm, 80Km, LC connector w/o DDM, L-1.2/LR2	
	PHCUW	Single-mode optical module with dual uni-directional fiber, 155Mbps, 1550nm, 100Km, LC connector w/o DDM, L-1.2/LR2Fast Ethernet	
	PHCXW	Single-mode optical module with dual uni-directional fiber, 155Mbps, 1550nm, 120Km, LC connector w/o DDM, L-1.2 extended distance	
	PHB3D	Single-mode optical module with dual uni-directional fiber, 155Mbps, 1310nm, 30Km, LC connector with DDM, S-1.1/IR1/Fast Ethernet	
	PHB5D	Single-mode optical module with dual uni-directional fiber, 155Mbps, 1310nm, 50Km, LC connector with DDM, L-1.1/LR1/Fast Ethernet	
	PHC8D	Single-mode optical module with dual uni-directional fiber, 155Mbps, 1550nm, 80Km, LC connector with DDM, L-1.2/LR2	
	PHCUD	Single-mode optical module with dual uni-directional fiber, 155Mbps, 1550nm, 100Km, LC connector with DDM, L-1.2/LR2/Fast Ethernet	
	PHCXD	Single-mode optical module with dual uni-directional fiber, 155Mbps, 1550nm, 120Km, LC connector with DDM, L-1.2 extended distance	
155 Mbps Bi-directional Single Fiber	PHD2W	Single-mode optical module with single bi-directional fiber, 155 Mbps, Tx 1310 nm/Rx 1550 nm, 10~20Km, LC connector w/o DDM, Fast Ethernet and compliant with ITU G.957	▪ 1310nm from master to slave ▪ Order PHD2W to use with PHE2W ▪ Use 1 fiber
	PHE2W	Single-mode optical module with single bi-directional fiber, 155Mbps, Tx 1550 nm/Rx 1310 nm, 10~20Km, LC connector w/o DDM, Fast Ethernet and compliant with ITU G.957	▪ 1550nm from slave to master ▪ Order PHE2W to use with PHD2W ▪ Use 1 fiber
	PHD6W	Single-mode optical module with single bi-direction fiber, 155Mbps, Tx 1310 nm/Rx 1550nm, 60Km, LC connector w/o DDM, Extend distance L4.2	▪ 1310nm from master to slave ▪ Order PHD6W to use PHE6W ▪ Use 1 fiber
	PHE6W	Single-mode optical module with single bi-directional fiber, 155Mbps, Tx 1550 nm/Rx 1310 nm, 60Km, LC connector w/o DDM, Extend distance L4.2	▪ 1550nm from slave to master ▪ Order PHE6W to use with PHD6W ▪ Use 1 fiber
155 Mbps Electrical transceiver	EHNAC	Electrical transceiver module, 155Mbps, 100m, mini-BNC coaxial connector	
622M~1.25G mini GBIC Dual Fiber	PKB1W	Single-mode optical module with dual uni-directional fiber, 622M~1.25G, 1310nm, 10Km, LC connector w/o DDM, S-4.1/IR1/1000Base-LX	Use 2 fibers for all SFP optical modules

155~622Mbps mini GBIC Dual Fiber	PJB2W	Single-mode optical module with dual uni-directional fiber, 155~622Mbps, 1310nm, 15~20Km, LC connector w/o DDM, 1000 Base-LX	
	PJB5W	Single-mode optical module with dual uni-directional fiber, 155~622Mbps, 1310nm, 50Km, LC connector w/o DDM, L-4.1/LR1	
	PJC8W	Single-mode optical module with dual uni-directional fiber, 155~622Mbps, 1550nm, 80Km, LC connector w/o DDM, S-4.2/LR2	
	PJB2D	Single-mode optical module with dual uni-directional fiber, 155~622Mbps, 1310nm, 15~20Km, LC connector with DDM, S-4.1/IR1	
	PJB4D	Single-mode optical module with dual uni-directional fiber, 155~622Mbps, 1310nm, 40Km, LC connector with DDM, L-4.1/LR1	
	PJB5D	Single-mode optical module with dual uni-directional fiber, 155~622Mbps, 1310nm, 50Km, LC connector with DDM, L-4.1/LR1	
	PJC8D	Single-mode optical module with dual uni-directional fiber, 155~622Mbps, 1550nm, 80Km, LC connector with DDM, L-4.2/LR2	
	PJCXW	Single-mode optical module with dual uni-directional fiber, 155~622Mbps, 1550nm, 120Km, LC connector w/o DDM, L-4.2 extended distance	
	PJCXD	Single-mode optical module with dual uni-directional fiber, 155~622Mbps, 1550nm, 120Km, LC connector with DDM, L-4.2 extended distance	

NOTE: For other special optical modules, please contact your nearest Loop sales representative.

■ where **tg1** is manufacture option used to select T1/E1 type for the Tributary Group1 (TG1) slot (must select one)

tg1=	Description	Note
8TE	8 T1/E1(120 ohm) on board	
8E75	8 E1(75 ohm) on board	
16TE	16 T1/E1(120 ohm) on board	
16E75	16 E1(75 ohm) on board	

■ where **tg2** is manufacture option used to select a daughter card for the Tributary Group2 (TG2) slot:

tg2=	Description	Note
16TE	16 T1/E1(120 ohm) daughter card	
16E75	16 E1(75 ohm) daughter card	
3TE3	3 E3/T3 daughter card	1US4 version only
1GE4NSW	1 GbE over 155/622 Mbps SDH/SONET signal daughter card without L2 switch.	
4FE4NSW	4 FE over 155/622 Mbps SDH/SONET signal daughter card without L2 switch.	

■ where **tg3** is manufacture option used to select a daughter card for the Tributary Group3 (TG3) slot:

tg3=	Description	Note
16TE	16 T1/E1(120 ohm) daughter card	
16E75	16 E1(75 ohm) daughter card	
4EoS6SW	1 GbE and 3FE into L2 switch with 1 GbE link mapped to 155/622 Mbps SDH/SONET signal daughter card	Available for 1US4 version only. Must use SD48 power if you are selecting a **1GE4NSW** or a **4FE4NSW** daughter card as a **tg2** option and a **4EoS6SW** or **a 4EoS1SW** daughter card as a **tg3** option.
4EoS1SW	1 GbE and 3FE into L2 switch with 4/8 100 Mbps links mapped to 155/622 Mbps SDH/SONET signal daughter card	
1GE4NSW	1 GbE over 155/622 Mbps SDH/SONET signal daughter card without L2 switch	
4FE4NSW	4 FE over 155/622 Mbps SDH/SONET signal daughter card without L2 switch	
3TE3	3 E3/T3 daughter card	1US4 version only

■ where **pp1** is used to select 1st power supply:

pp1 =	Description	Note
AD	AC and DC (co-existent) fixed, power module (90 to 240 Vac / -36 to -75Vdc)	-AD is a fixed power supply. If you order AD then you cannot select any items for pp2 -For AC power module choose an appropriate power cord -Order one power module only -Cannot be used if you selected a **1GE4NSW** or a **4FE4NSW** daughter card as a **tg2** option and a **4EoS6SW** or **a 4EoS1SW** daughter card as a **tg3** option.
SA	Single AC plug-in power module (90 to 240 Vac, 50/60Hz)	-For AC choose an appropriate power cord -Order one power module only -Cannot be used if you selected a **1GE4NSW** or a **4FE4NSW** daughter card as a **tg2** option and a **4EoS6SW** or **a 4EoS1SW** daughter card as a **tg3** option.
SD48	Single, hot-swappable DC plug-in power module -48 Vdc (-36 to -75Vdc)	-Can order up to two power modules for Redundancy

■ where **pp2** is used to select 2nd power supply:

pp2 =	Description	Note
SD48	Single, hot-swappable DC plug-in power module -48 Vdc (-36 to -75Vdc)	-Can order up to two power modules for redundancy

Comparison of Slots between 1US1 and 1US4

	1US1	1US4
Tg1	8TE/8E75/16TE/16E75	the same with 1US1
Tg2	Does not support 3TE3	All
Tg3	Does not support 3TE3, 4EoS6SW, and 4EoS1SW	All

Loop-O9400S STM-1/4 PRODUCT SPECIFICATIONS

SFP Module Characteristics

Aggregate Lines and STM-1/4 (OC-3/12) tributary Modules Characteristics

SFP Optical Module	Direction	Data Rate	Wavelength(nm)	Connector	Distance
MHBTW	Dual uni-directional fiber	155M	1310nm	LC without DDM	2 Km
PHB3W	Dual uni-directional fiber	155M	1310nm	LC without DDM	30 Km
PHB5W	Dual uni-directional fiber	155M	1310nm	LC without DDM	50 Km
PHC8W	Dual uni-directional fiber	155M	1550nm	LC without DDM	80 Km
PHCUW	Dual uni-directional fiber	155M	1550nm	LC without DDM	100 Km
PHCXW	Dual uni-directional fiber	155M	1550nm	LC without DDM	120 Km
PHB3D	Dual uni-directional fiber	155M	1310nm	LC with DDM	30 Km
PHB5D	Dual uni-directional fiber	155M	1310nm	LC with DDM	50 Km
PHC8D	Dual uni-directional fiber	155M	1550nm	LC with DDM	80 Km
PHCUD	Dual uni-directional fiber	155M	1550nm	LC with DDM	100 Km
PHCXD	Dual uni-directional fiber	155M	1550nm	LC with DDM	120 Km
PHD2W	Single bi-directional fiber	155M	Tx 1310 nm/Rx 1550 nm	LC without DDM	10~20 Km
PHE2W	Single bi-directional fiber	155M	Tx 1550 nm/Rx 1310nm	LC without DDM	10~20 Km
PHD6W	Single bi-directional fiber	155M	Tx 1310 nm/Rx 1550nm	LC without DDM	60 Km
PHE6W	Single bi-directional fiber	155M	Tx 1550 nm/Rx 1310 nm	LC without DDM	60 Km

SFP Electrical Module	Direction	Data Rate	Wavelength(nm)	Connector	Distance
EHNAC	Dual uni-directional	155M	n.a.	Mini-BNC	100 m

SFP Optical Module	Direction	Data Rate	Wavelength(nm)	Connector	Distance
PKB1W	Dual uni-directional fiber	622M~1.25G	1310nm	LC without DDM	10 Km
PJB2W	Dual uni-directional fiber	155~622M	1310nm	LC without DDM	15~20 Km
PJB5W	Dual uni-directional fiber	155~622M	1310nm	LC without DDM	50 Km
PJC8W	Dual uni-directional fiber	155~622M	1550nm	LC without DDM	80 Km
PJCXW	Dual uni-directional fiber	155~622M	1550nm	LC without DDM	120 Km
PJB2D	Dual uni-directional fiber	155~622M	1310nm	LC with DDM	15~20 Km
PJB4D	Dual uni-directional fiber	155~622M	1310nm	LC with DDM	40 Km
PJB5D	Dual uni-directional fiber	155~622M	1310nm	LC with DDM	50 Km
PJC8D	Dual uni-directional fiber	155~622M	1550nm	LC with DDM	80 Km
PJCXD	Dual uni-directional fiber	155~622M	1550nm	LC with DDM	120 Km

Max. Number of Cross-connect Modules

1US1 Shelf STM-1 (OC-3)	2 STM-1 (OC-3) aggregate lines
1US4 Shelf STM-1/4 (OC-3/12)	2 STM-1/4 (OC-3/12) aggregate lines

Max. Number of Tributary Modules

1US1 Shelf STM-1 (OC-3)	48 E1/T1 tributaries 2GbE tributaries 8FE tributaries
1US4 Shelf STM-1/4 (OC-3/12)	48 E1/T1 tributaries 2 E3/T3 tributaries 2 GbE tributaries 8 FE tributaries

Tributary Modules

E1 Interface

Line Rate	2.048 M bps ± 50 ppm	Output Mask	ETS 300 689 Sec.4.2.1.2 ITU G.703
Line Code	AMI/HDB3	Jitter	ITU G.823
Input Signal	ITU G.703	Framing	Unframed
Output Signal	ITU G.703	Impedance	75 ohm coax/120 ohm twisted pair
		Connector	One SCSI-II 68-pin

T1 Interface

Line Rate	1.544 M bps ± 32 ppm	Output Mask	Bellcore GR-499-core
Line Code	AMI/B8ZS	Jitter	ITU G.824
Input Signal	DSX-1 0dB to –6dB w/ALBO	Framing	Unframed
Output Signal	DSX-1 w/short haul (0-133, 133-266,266-399, 399-533, 533-655 feet)	Impedance	100 ohm
		Connector	One SCSI-II 68-pin

E3 Interface

Line Rate	34.368 M bps ± 20ppm	Output Mask	ETS 300 689 Sec.4.2.1.2 ITU G.703
Line Code	HDB3	Jitter	ITU G.823
Input Signal	ITU G.703	Framing	Unframed
Output Signal	ITU G.703	Connector	mini-BNC
		Impedance	75 ohm coax

T3 Interface

Line Rate	44.736 M bps ± 20ppm	Output Mask	Bellcore GR-499-core
Line Code	B3ZS	Jitter	ITU G.824
Input Signal	ITU G.703	Framing	Unframed
Output Signal	ITU G.703	Connector	mini-BNC
		Impedance	75 ohm coax

RS232 Interface

Rate	up to 19.2K bps, Asynchronous	Connector	Two ports in one DB9, female

Fast Ethernet (FE) interface

Line Rate	10/100M bps	Mapping	n x VC12, n x VC11, n x VC3 or n x VC4
Layer2 Protocol	RSTP (802.1W), VLAN (802.1Q, 802.1P) Flow Control (802.3X) MSTP (802.1S) (future option) IGMP Snooping (future option) QoS	Connector	RJ45
Process Protocol	VCAT, GFP(G.7041), LAPS, LCAS(G.7042), and non-LCAS		

Gigabit Ethernet (GbE) interface

Line Rate	10/100/1000Mbps (1GE4NSW only supports 1000Mbps)	Mapping	n x VC12, n x VC11, n x VC3 or n x VC4
Layer2 Protocol	RSTP (802.1W), VLAN (802.1Q, 802.1P) Flow Control (802.3X) MSTP (802.1S) (future option) IGMP Snooping (future option) QoS	Connector	RJ45
Process Protocol	VCAT, GFP(G.7041), LAPS, LCAS(G.7042), and non-LCAS		

System Clock

Clock Source	Internal clock 2 aggregate lines clocks (East STM-1/4 (OC-3/12), West STM-1/4 (OC-3/12)) 3 tributary clocks 1 external input and output clock (2.048 MHz of ITU-T G.703 or E1 for STM-1/4, T1 for OC-3/12)

Management

LEDs	Multi-color LEDs
Console port	Electrical: RS232 Connector: DB9S (female, DCE) Protocol: Menu driven VT-100
Telnet	
SNMP	SNMPv1 (RFC1213)
Inband interface	Using 1 E1
Outband interface	Using DCC channel, user selectable 3, 9 or 12 channels

Diagnostics

Mainboard

Loopback Test	Direction: to optical lines, to tributary lines

TE1 card

Loopback Test	Direction: to optical lines, to tributary lines
BERT Test	TE1 interface Direction: to optical lines, to tributary lines

Performance Monitor

Performance Reports	Performance Parameters: Error Block (EB), Background Block Error (BBE), Error Second (ES), Burst Error Second (BES), Severe Error Second (SES), Unavailable Second (UAS)			
Alarm History	System Alarm	Alarm Cut Off, Power Loss, TS Sync Loss, SNCP Switch, MSP Switch, Login/Logout, FOM Equip/Unequip, SFP Tx Fail, SFP Rx Fail, SFP Temperature		
	SDH/SONET Line Alarm	SDH	Line	PI-LOS, RS-LOF, RS-TIM, RS-BIP UAS, MS-SD, MS-SF, MS-AIS, MS-RDI, MS-BIP UAS, MS-REI UAS,
			Ho-Path	AU-LOP, AU-AIS, HP-SD, HP-SF, HP-TIM, HP-UNEQ, HP-PLM, HP-RDI-S, HP-RDI-C, HP-RDI-P, HP-BIP UAS, HP-REI UAS, LOM
			Lo-Path	TU-LOP, TU-AIS, LP-SD, LP-SF,
		SONET	Line	LOS-PI, LOF-S, TIM-S, BIP-S UAS, SD-L , SF-L , AIS-L , RDI-L , BIP-L UAS, REI-L UAS
			STS-Path	LOP-P, AIS-P, SD-P, SF-P, TIM-P, UNEQ-P, PLM-P, RDI-S-P, RDI-C-P, RDI-P-P, BIP-P UAS, REI-P UAS, LOM
			VT-Path	LOP-V, AIS-V, SD-V, SF-V
Alarm Queue	Contains up to 200 alarm records of latest alarm types, alarm severity, date and time.			

Power

AC module	100 to 240 Vac, 50/60Hz	
DC module	-48 Vdc (-36 to -75 Vdc)	
AC and DC coexistent module	100 to 240 Vac, 50/60Hz, -36 to -75 Vdc	
Power Consumption	Loop-O9400R-1US1	DC: Max 24.6 W AC: Max 25.7 W DC & AC: Max 27.5 W
	Loop-O9400R-1US4	DC: Max 39.6 W AC: Max 43.9 W DC & AC: Max 47.1 W

Physical and Environmental

Dimensions for 1u	432 x 44 x 240 mm. (W x H x D)
Temperature	0 to 50°C
Humidity	0-95%RH (non-condensing)
Mounting	19 inch rack mountable, and wall mountable

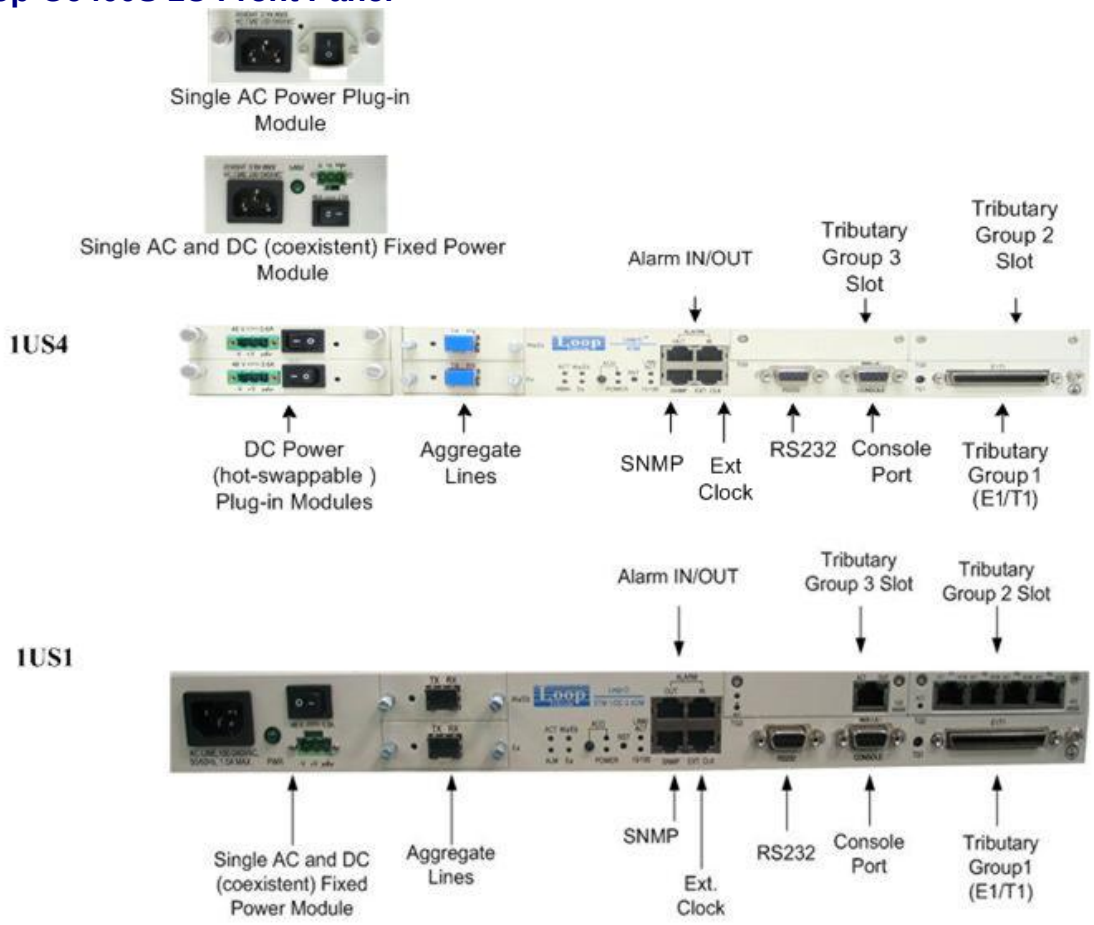
Standards Compliance

ITU	G.664, G.707, G.7041, G.7042, G.775, G.783, G.806, G.823, G.747, X.86
ANSI	T1.105, T1.107
IEEE	802.1q (VLAN), 802.1w (RSTP), 802.1s (MSTP), 802.1ad (stack VLAN), 802.3x (flow control), 802.1p (QoS)

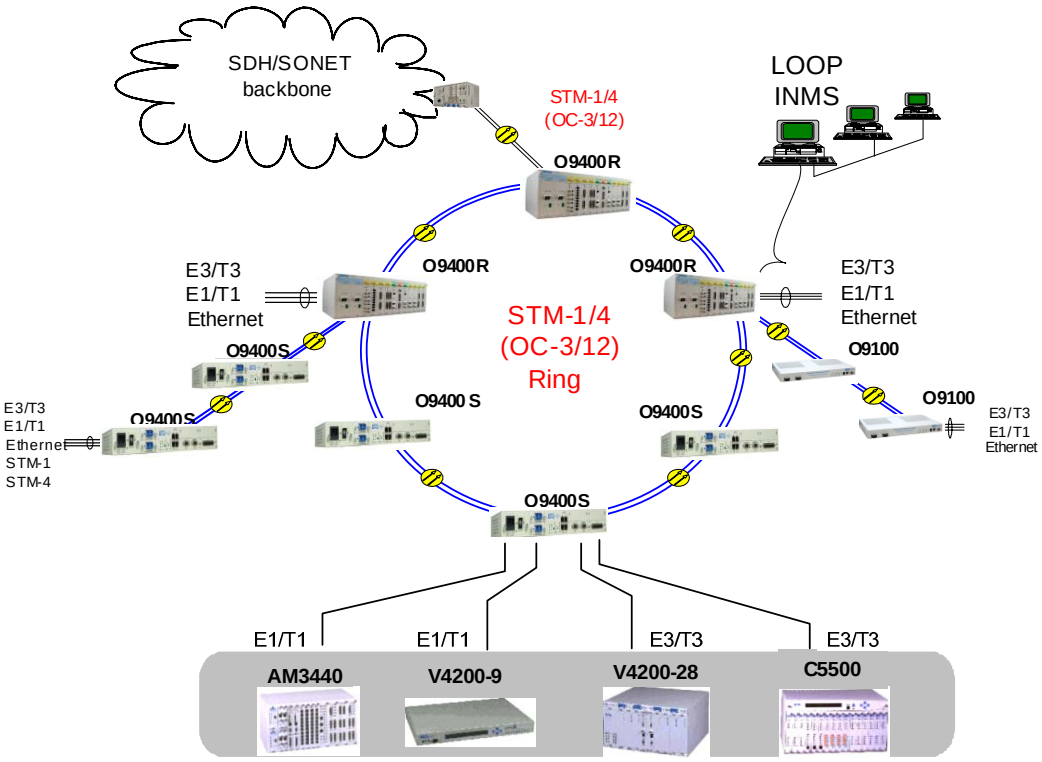
Certification

EMC	EN55024
EMI	EN55022 Class A, FCC Part 15 Class A, EN55024
Safety	EN60950-1, IEC60950-1

Loop-O9400S 1U Front Panel



Application Illustration



Loop-O9400S Tributary Type and Capacity Reference Table

1US4

Slot / Max. Capacity	Tributary Group1 (TG1)	Tributary Group2 (TG2)	Tributary Group3 (TG3)
48E1/T1	16 E1/T1	16 E1/T1	16 E1/T1
6E3/T3	N/A	3E3/T3	3E3/T3
2 GbE	N/A	1 GbE	1 GbE
8FE	N/A	4FE	4FE
1 GBE and 3 FE	N/A	N/A	1 GbE and 3 FE

Note: The maximum capacity of the tributary cards is one STM4.

1US1

Slot / Max. Capacity	Tributary Group1 (TG1)	Tributary Group2 (TG2)	Tributary Group3 (TG3)
48E1/T1	16 E1/T1	16 E1/T1	16 E1/T1
2Gbe	N/A	1Gbe	1Gbe
8FE	N/A	4FE	4FE

Note: The maximum capacity of tributary cards is two STM1.

Loop-O9400S Aggregate Line and Capacity Reference Table

1US4

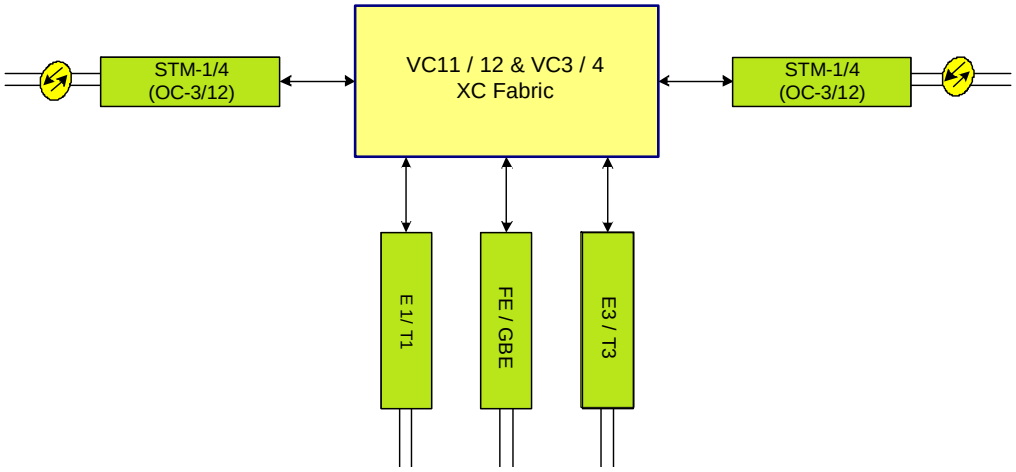
SLOT / Max. Capacity	Wa/Eb	Ea
2 STM-1/4 (OC-3/12) for ADM	STM-1/4 (OC-3/12)	STM-1/4 (OC-3/12)
2 STM-1/4 (OC-3/12) for TM (1+1)	STM-1/4 (OC-3/12)	STM-1/4 (OC-3/12)
2 STM-1/4 (OC-3/12) for 2 TM	STM-1/4 (OC-3/12)	STM-1/4 (OC-3/12)

1US1

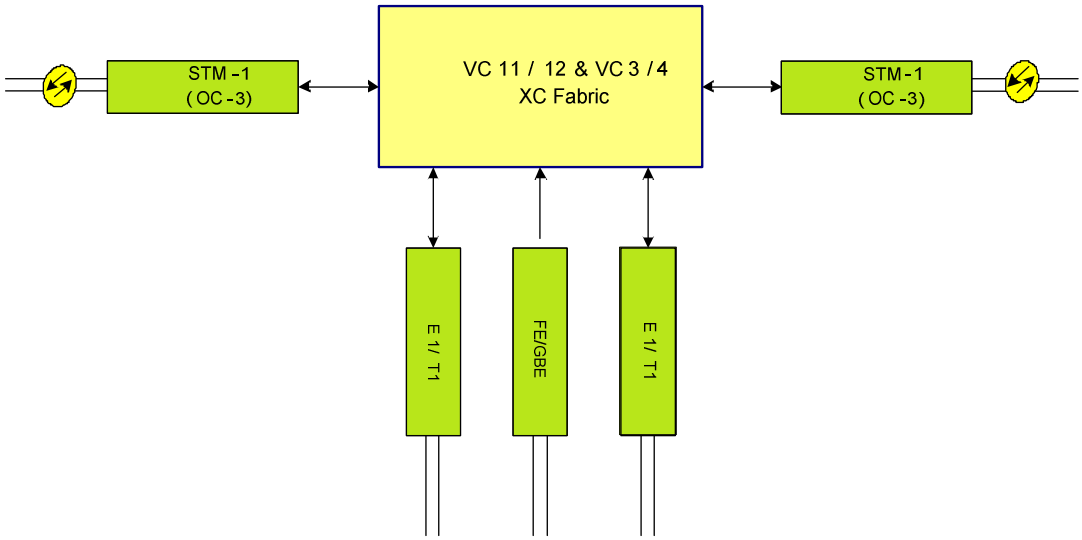
SLOT / Max. Capacity	Wa/Eb	Ea
2 STM-1 (OC-3) for ADM	STM-1 (OC-3)	STM-1 (OC-3)
2 STM-1 (OC-3) for TM (1+1)	STM-1 (OC-3)	STM-1 (OC-3)
2 STM-1 (OC-3) for 2 TM	STM-1 (OC-3)	STM-1 (OC-3)

Block Diagrams:

1US4 Model



1US1 Model



LoopTelecom.com

LOOP TELECOMMUNICATION INTERNATIONAL, INC.
ISO 9001/ISO 14001

Worldwide
8F, No. 8, Hsin Ann Road,
Science-Based Industrial Park
Hsinchu, Taiwan 30078
Tel:+886-3-578-7696
Fax:+886-3-564-6272
www.LoopTelecom.com

Taipei, Taiwan
6F, No. 36, Alley 38, Lane 358,
Rueiguang Road,
Neihu, Taiwan 11492
Tel:+886-2-2659-0399
Fax:+886-2-2659-2325
michael_tzeng@loop.com.tw

North America
8 Carrick Road
Palm Beach Gardens
Florida 33418, U.S.A.
Tel:+1-561-627-7947
Fax:+1-561-627-6615
jimber561@aol.com

Tianjin China
No. 240 Baidi Road
Nankai District
Tianjin 300192 China
Tel:+86-22-8789-4027
Fax:+86-22-8789-0344
wym@loop-tj.com

sales@loop.com.tw

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